EPA Region III and MDE Municipal Separate Storm Sewer System (MS4) Training

Maryland Phase II MS4 Forum

November 18–19, 2015
Laurel, Maryland

Session 1c

MCM Focus – Illicit Discharge Detection and Elimination (IDDE)

Presentation Topics

- Program Components
- Documentation
- Common Compliance Issues
- Resources
- Q&A

Illicit Discharges Can Take Many Forms…

How do you define it?

Examples of Illicit Discharges

- Sewage and septage
- Wash water flows
  - Commercial carwash wastewater, greywater from homes, fleet washing, commercial laundry wastewater, floor washing to shop drains
- Liquid wastes
  - Oil, paint and process water (radiator flushing water, plating bath wastewater, etc.)
- Sediment and other pollutant sources
- Anything other than authorized nonstormwater discharges as specified in the permit!

Program Components

- Ordinances / Legal Authority
- System Mapping
- Dry Weather Field Screening
- Public and Employee Reporting
- Investigation, Elimination, and Enforcement

- Spill Prevention and Response
- Oils, Toxics, and Household Hazardous Waste Control
- Sanitary Sewer Issues Related to MS4
- Municipal Staff Education and Training

Program Requirements

- ✓ Develop a map showing extent of storm drain system
- ✓ Legal means to enter, investigate, and eliminate (typically through ordinance or other mechanism)
- ✓ Procedures to field screen outfalls on consistent basis
- ✓ Inspection procedures for source identification
- ✓ Enforcement and penalty procedures
- ✓ Procedures to address spills and illegal dumping
- ✓ Inform public of illicit discharge / disposal hazards

System Map

- Outfalls (with unique identifiers)
- Name and location of receiving waters
- Inlets and pipes
- MS4 interconnections
- *Post-construction BMPs*

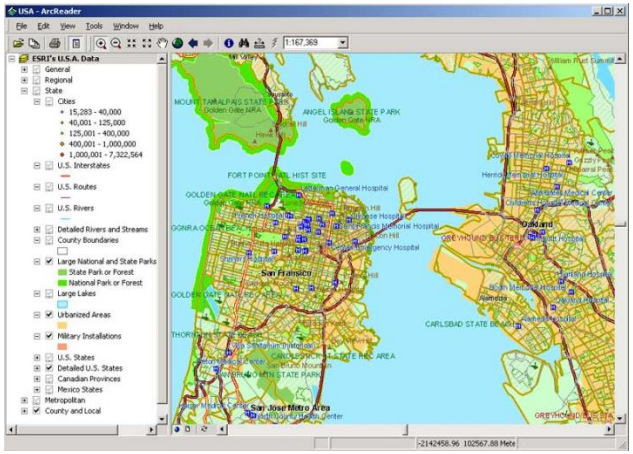


Image from www.esri.com

Written Procedures…

- Dry weather field screening methodologies
- Prioritized schedule for screening
- Timeframe for investigations
- Methodologies to determine sources
- Mechanisms to eliminate discharges (policies / procedures)
- Methods for follow-up investigations
- *Mechanism to "track and document"*
  - *Date(s), investigation results, follow-up activities, corrective action*

Public and Employee Reporting

- Do you operate a dedicated “hotline” or website that citizens can report spills, discharges, or dumping?
- What types of public outreach materials are disseminated to educate the public on reporting?
- Do you track the number of public / employee calls or complaints regarding illicit discharges?
  - Do you prioritize subwatersheds or neighborhoods and assign resources based on frequency and types of illicit discharge incidents?

Are your staff aware of illicit discharges?
Do you have a process in place?

What happens next?

IDDE Discussion

STEP 1

Detection

DETECTION

What does your program do to detect illicit discharges?

Who performs these activities?

This Drains to the
New River

DETECTION TOOLS & ACTIVITIES

- Dry Weather Screening
- Prioritization
- Staff “Eyes in the Field”
- Public Complaint Response
- Surveillance
- Sampling

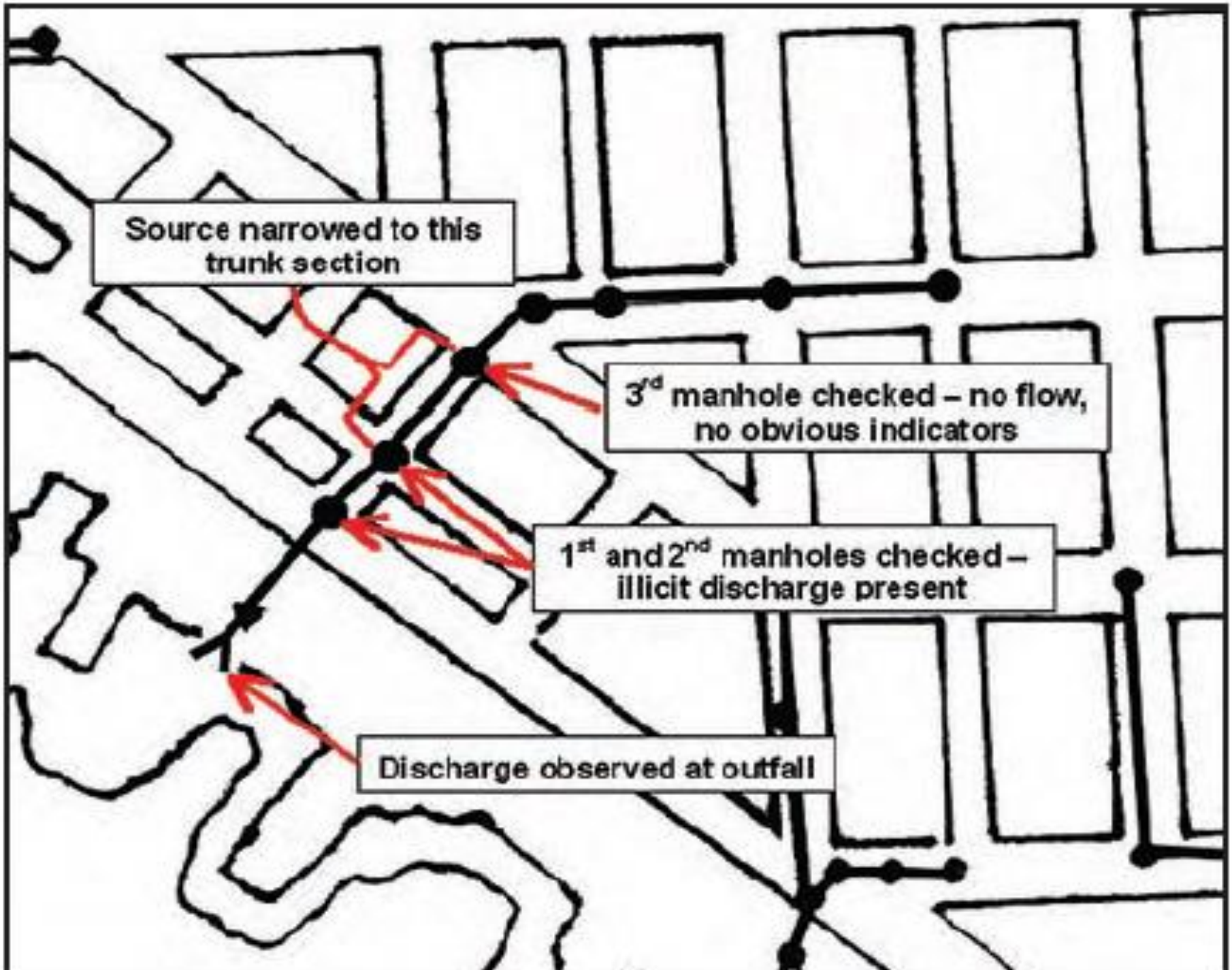
STEP 2

Investigation

INVESTIGATION

What does your program do to investigate illicit discharges?

Who performs these activities?


Source narrowed to this trunk section
3rd manhole checked – no flow, no obvious indicators
1st and 2nd manholes checked – illicit discharge present
Discharge observed at outfall

INVESTIGATION TOOLS & ACTIVITIES

- Forms/Photos/Videos
- System Maps
- Dye Testing
- Smoke Testing
- CCTV
- Rapid Windshield Survey
- Odd Hours Monitoring

STEP 3

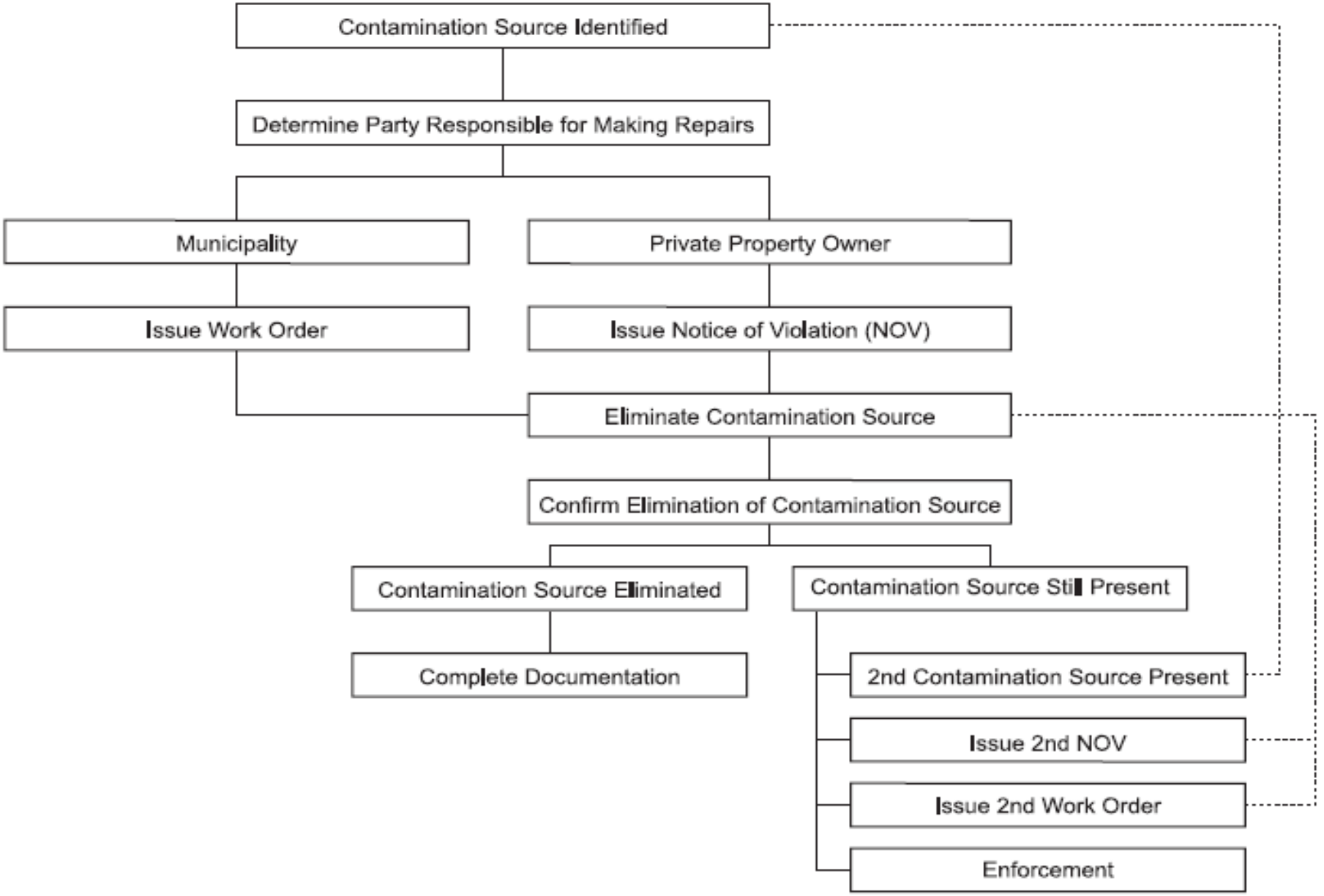
Elimination

ELIMINATION and ENFORCEMENT

What does your program do
to enforce its ordinance/regulatory mechanism?

What staff performs these tasks?

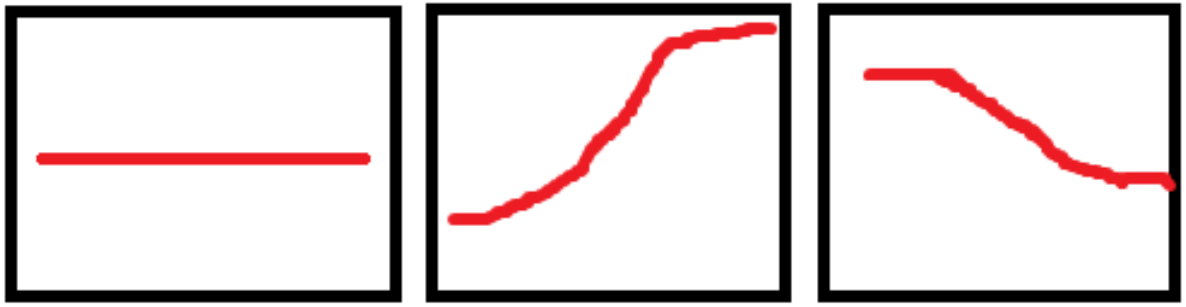
Flow Chart for Corrective Action



ELIMINATION TOOLS & ACTIVITIES

- Clearly Defined Local IDDE Ordinance
- Escalating Enforcement Approach
- Mix of Compliance Assistance and Enforcement
- Public Education and Outreach
- Pollution Prevention/Good Housekeeping

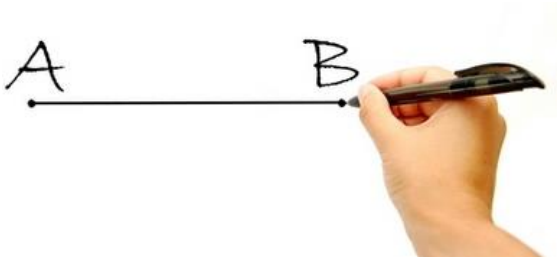
The red lines represent the number of illicit dischargers reported over time.



Which curve makes us happy?

Documentation and Recordkeeping

- For each potential illicit discharge report:
  - Is the problem clearly described?
  - How long until investigation conducted?
  - Did the MS4 follow-up to verify that the problem was corrected?
  - What enforcement actions were taken?
  - Was the issue referred to another agency?



Documentation Examples

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drsinage Area (Check all that apply):

☐ Industrial ☐ Open Space

☐ Ultra-Urban Residential ☐ Institutional

☐ Suburban Residential Other: _____

☐ Commercial Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Illicit Discharge Detection and Elimination: Technical Appendices D-3

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No
2.	If yes, collected from:	☐ Flow	☐ Pool
3.	Intermittent flow trap set?	☐ Yes	☐ No If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

D-4 *Illicit Discharge Detection and Elimination: Technical Appendices*

	A	B	C	D
1	Event ID	Date Reported	Status	Investigation
2	1	4/11/2015	Closed	Xyzxyzxyz
3	2	4/19/2015	Closed	Xyzxyzxyz
4	3	5/1/2015	Open	Xyzxyzxyz
5				
6				
7				
8				
9				

Proper documentation and supporting evidence is extremely important.

Audit / Inspection Activities

- Office & field-based activities
- Discussions with key personnel
  - Definition of illicit discharge
  - Legal authority
  - Complaint process
  - Written procedure overview
  - Dry weather field screening locations and response examples
- Records review
  - Event documentation
  - Procedures and tools (e.g., checklists, databases)

Audit / Inspection Activities

- Field activities
  - Visit several outfalls with field staff
  - Asset mapping verification
  - Review screening process
  - Review documentation process
  - Visit persistent problem areas
  - Accompany complaint response

Common Compliance Issues

- Lack of procedures for how to conduct IDDE investigations
- Lack of tracking for IDDE events and resolution
- IDDE programs that are largely reactionary spill response programs
- Failure to conduct dry weather screening or follow-up analytical monitoring
- Lack of system characterization to determine if a discharge is ‘illicit’ or not

Resources

- IDDE Guidance developed by the Center for Watershed Protection and Dr. Robert Pitt
  - http://www.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

- EPA Menu of IDDE BMPs and Other Resources
  - http://water.epa.gov/polwaste/npdes/swbmp/Illicit-Discharge-Detection-and-Elimination.cfm
  - http://water.epa.gov/polwaste/npdes/NPDES-Training-Courses-and-Workshops.cfm#sw

Questions / Discussion

Session 1d
IDDE Program Showcase

Naval Academy

Matt Klimoski

Cecil County

Sean McCandless

Sanita Corum

City of Bowie

Tiffany Wright